

antenna position signals to generate elevation motor drive signals that are supplied to the antenna 11. The servo controller 22 also outputs azimuth control signals to a servo power amplifier 23 that generates azimuth motor drive signals that are supplied to the antenna 11. Motor position control signals are fed from the antenna 11 to the servo power amplifier 23. Inertial reference signals are used to accurately steer the antenna 11 toward the satellite 18. Because all television channels received from the satellite 18 are contained within the data stream originating with the satellite 18, each passenger can select any particular channel, without affecting other passengers.

Independent claim 1 of the present application is directed to a system in which an antenna is automatically positioned in response to selection of a channel based upon location of the channel transmitter and the location of the antenna. The Sklar patent does not disclose that the antenna 11 is positioned based on channel selection. That is, the Sklar patent does not disclose that, when a passenger makes a channel selection, the antenna 11 is positioned in response to that channel selection. Indeed, channel selections made by the passenger do not result in positioning of the antenna 11, as can be seen by considering that all

channels are transmitted from the same transmitter, i.e., the satellite 18. The antenna 11 is positioned merely to keep it pointed at the satellite 18 as the aircraft moves.

Because the antenna 11 is not positioned in response to channel selection, the Sklar patent does not anticipate independent claim 1.

Independent claim 13 of the present application is directed to a system in which an antenna is automatically driven to a position dependent upon a channel selected by a user, a location of a signal source associated with the selected channel, and a location of the antenna. As discussed above, the Sklar patent does not disclose that the antenna 11 is positioned depending on a channel selection made by a user.

Therefore, the Sklar patent does not anticipate independent claim 13.

Independent claim 28 is directed to a method in which a path is automatically computed based at least in part on a location of a source of a channel selected by a user, and in which an antenna is driven along the computed path. The Sklar patent does not disclose that the antenna 11 is driven along a path that is computed based on a location of a source of a channel tuned by a user.

Therefore, the Sklar patent does not anticipate independent claim 28.

Because independent claims 1, 13, and 28 are not anticipated by the Sklar patent, dependent claims 5, 12, 15, 27, and 30 are likewise not anticipated by the Sklar patent.

In section 2 of the Office Action, the Examiner rejected claims 6, 11, 16, 26, 31, and 36 under 35 U.S.C. §103(a) as being unpatentable over the Sklar patent. Dependent claims 6, 16, and 31 recite compass related features. The Examiner asserts that GPS and a compass are equivalent. However, they are not equivalent. GPS gives position and a compass gives only direction.

Moreover, the Examiner has not shown how the GPS disclosed in the Sklar patent is equivalent the claimed compass feature. For example, the GPS disclosed in the Sklar patent is used with respect to a platform whose location changes, whereas the claimed compass feature is used on a platform whose location does not change. The Examiner has not shown how the compass can be used on the platform disclosed in the Sklar patent. Furthermore, the compass recited in dependent claims 16 and 31 is used for calibration. The Sklar patent mentions nothing about calibration. Additionally, the Sklar patent does not suggest the use of a compass.

For all of these reasons, dependent claims 6, 16, and 31 are not unpatentable over the Sklar patent.

Dependent claims 11, 26, and 36 recite multiple antennas. The Examiner asserts that multiple antennas amount to mere duplication and, therefore, is not a patentable feature. However, the use of more than one antenna is not suggested by the Sklar patent. In fact, multiple antennas would be so pointless in the system disclosed by the Sklar patent that the Sklar patent teaches away from multiple antennas.

For this reason, dependent claims 11, 26, and 36 are not unpatentable over the Sklar patent.

In section 3 of the Office Action, the Examiner rejected claims 2-4, 14, and 29 under 35 U.S.C. §103(a) as being unpatentable over the Sklar patent in view of the Ma patent. Claims 2, 14, and 29 require storing in memory the location of the source of the selected channel. The Examiner recognizes that the Sklar patent does not disclose storing in memory the location of the source of the selected channel. Accordingly, the Examiner points to the element 414 of the Ma patent.

The Ma patent discloses a system to automatically seek an optimum antenna position for reception by the antenna of a signal from a satellite. As disclosed in Figure 5 of the Ma patent, a software

program is executed to perform a search procedure according to a flowchart 300. After system initialization at a step 301, a step 302 initiates a Level 2 seek procedure in order to search within a predefined area for video signals corresponding to any of the satellite's channels. If a video signal is not detected by the Level 2 seek procedure, the search area for the Level 2 seek is redefined at a step 304 to an adjacent non-overlapping location, and the Level 2 seek is reiterated. If a video signal is detected by the Level 2 seek procedure, a high resolution Level 1 seek is performed at a step 305 in order to determine the precise position of the antenna for optimum reception of signals from the satellite.

Figures 7, 8 (which includes the block 414), and 9 show the Level 1 seek procedure in detail, and Figure 11 shows the Level 2 seek procedure in detail. Figure 12 is a flow chart showing a Level 3 seek procedure for the positioning of the antenna in order to perform the Level 2 seek according to the Level 2 search pattern at adjacent non-overlapping positions until a receivable satellite signal is detected.

As the Examiner has noted, once the optimum position of the antenna is found with respect to a satellite, that position is stored. This stored position

can be used as a starting position for subsequent searching of the antenna position that gives best reception with respect to the satellite. Such subsequent searching may arise in cases where there is a displacement of the antenna from the optimum position such as due to mechanical error or other problem or where the antenna is be again pointed at the satellite after having been pointed at another satellite.

As with the Sklar patent, the Ma patent does not disclose pointing an antenna at a channel source in response to selection of a channel by a user. Therefore, the combination of the Sklar patent and the Ma patent do not teach or suggest the inventions of the rejected claims.

For this reason, independent claims 1, 13, and 28 as well as dependent claims 2-4, 14, and 29 are not unpatentable over the Sklar patent in view of the Ma patent.

In addition, while the Ma patent does disclose storing the position of the antenna when it is optimally pointed at a satellite, the stored position is used as a starting point of a search. Accordingly, this stored position is not used as recited in the claims where the antenna is simply pointed at the stored location.

For this reason also, claims 2, 14, and 29 are not unpatentable over the Sklar patent in view of the Ma patent.

Claim 4 recites that the location of the antenna is stored in memory. The Sklar patent does not show this feature because the position of the antenna is variable. Similarly, the Ma patent does not show this feature. The Examiner asserts that the Ma patent discloses the storing of antenna location with respect to block 451 in Figure 7. However, this portion of Ma patent relates to storing the position of the antenna, not its location. As will be understood from a review of the Ma patent, position means the direction in which the antenna is pointing. Therefore, position is not location and the Ma patent does not disclose that the location of the antenna is stored.

For this reason, dependent claim 4 is not unpatentable over the Sklar patent in view of the Ma patent.

In Section 4 of the Office Action, the Examiner rejected claims 9, 25, and 35 as being unpatentable over the Sklar patent in view of the Taira patent. The Taira patent discloses an automatic controlling and tracking system for pointing an aircraft supported antenna at a ground office so that video signals generated by an air-

born television camera can be transmitted to the ground office. Accordingly, the Taira patent does not disclose pointing an antenna at a channel source in response to selection of a channel by a user. Therefore, the combination of the Sklar patent and the Taira patent do not teach or suggest the inventions of the rejected claims.

For this reason, independent claims 1, 13, and 28 as well as dependent claims 9, 25, and 35 are not unpatentable over the Sklar patent in view of the Taira patent.

In addition, dependent claims 9, 25, and 35 recite a variable gain amplifier whose gain is adjusted based on the location of the channel source. The Taira patent, on the other hand, discloses a variable gain amplifier 125 whose gain is adjusted in accordance with $\theta_B(t)$, where $\theta_B(t)$ is the downward elevation angle of the on-board antenna referenced to the air-borne coordinate system. Accordingly, $\theta_B(t)$ is based on the orientation of the antenna. By contrast, dependent claims 9, 25, and 35 recite that the gain of the variable gain amplifier is adjusted based on the location of the channel source.

Thus, even if the Sklar patent and the Taira could be combined, the combination would not result in the arrangement of dependent claims 9, 25, and 35. For

this reason also, dependent claims 9, 25, and 35 are not unpatentable over the Sklar patent in view of the Taira patent.

The Examiner did not explicitly reject dependent claims 7, 8, 10, 17-24, and 32-34. However, it appears that, based on the discussion on page 5 of the Office Action, the Examiner is of the belief that dependent claims 7, 8, 10, 17-24, and 32-34 are not patentable over the Sklar patent in view of the Ma patent. Dependent claims 7, 8, 19, 20, 24, and 33 relate to the reduction of a signal from a known offending source based on that source's location. The Examiner asserts that these claims are shown by the blocks 451 and 452 of the Ma patent.

The blocks 451 and 452, however, do not relate to the reduction of a signal from a known offending source based on that source's location. Instead, these blocks relate to the search for the best position of the antenna relative to the satellite. That is, as the antenna is moved through a search pattern, each position and the accompanying noise figure are recorded. If the noise figure of the current position is better than the noise figure of the previous position, the prior position and its corresponding noise figure are discarded, and the current position and its corresponding noise figure are

saved. When the position associated with the lowest noise figure is attained, that corresponding position of the antenna is used for reception from the satellite.

Thus, the position stored at a result of the operation of the blocks 451 and 452 is the position of the antenna with respect to the desired source, not the location of an offending source. Indeed, neither the Sklar patent nor the Ma patent disclose pointing an antenna at a desired source and reducing the signal from an offending source.

Accordingly, dependent claims 7, 8, 19, 20, 24, and 33 are patentable over the Sklar patent in view of the Ma patent.

Dependent claims 10, 21-23, and 34 relate to ghost cancellation or reduction. Neither the Sklar patent nor the Ma patent disclose ghost cancellation or reduction. The Examiner, however, asserts that it is inherent that ghosts will be cancelled as an anomaly of poor signal reception. However, this statement is not true because there are many causes of poor reception other than multipath reception.

The Examiner further asserts that the Ma patent, at column 7, lines 8-30, discloses that optimum reception is achieved dependent upon geographical topography that is stored in memory. However, this

portion of the Ma patent discloses no such thing, especially in relation to topographical features that cause ghosts. Instead, this portion merely discloses that system initialization includes the referencing of all system variables involved in the satellite seeking system, such as the parameters relating the motor controls to the current position of the satellite dish. System initialization also involves the initial orientation of the antenna in the general direction of the geo-stationary satellite orbit belt, which can be accomplished by the use of currently available computer charts that provide the location of every geo-stationary satellite that is within line of sight of given geographic coordinates. For example, for a geographic location directly above the north pole, all North American domestic relay television satellites are located within the geo-synchronous orbit belt from 70 degrees west to 140 degrees west. This information can be used to position the antenna so that it is approximately oriented toward a known satellite location.

Accordingly, dependent claims 10, 21-23, and 34 are patentable over the Sklar patent in view of the Ma patent.

Dependent claims 17 and 32 relate to calibration based upon a position of the antenna that

provides the best reception from a reference source.
Neither the Sklar patent nor the Ma patent disclose calibration of any sort, much less calibration based upon a position of the antenna that provides the best reception from a reference source.

Accordingly, dependent claims 17 and 32 are patentable over the Sklar patent in view of the Ma patent.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned **"VERSION WITH MARKINGS TO SHOW CHANGES MADE."**

In view of the above, it is clear that the claims of the present application patentably distinguish over the art applied by the Examiner. Accordingly, allowance of these claims and issuance of the above captioned patent application are respectfully requested.

Respectfully submitted,

Schiff, Hardin & Waite
6600 Sears Tower
233 South Wacker Drive
Chicago, Illinois 60606
(312) 258-5500

By: 

Trevor B. Joike
Reg. No: 25,642

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS

The following claim is added by this amendment:

37. A method of positioning an antenna
comprising:

in response to a tuning of an RF receiver to a first RF channel, positioning an antenna coupled to the RF receiver in order to point the antenna toward a first RF signal source of the first RF channel, wherein the first RF signal source has a first location, and wherein the first location is stored in a memory and is used to position the antenna so that the antenna points toward the first RF signal source; and,

in response to a re-tuning of the RF receiver to a second RF channel, re-positioning the antenna in order to point the antenna toward a second RF signal source of the second RF channel, wherein the second RF signal source has a second location, wherein the first and second locations are different, and wherein the second location is stored in the memory and is used to position the antenna so that the antenna points toward the second RF signal source.